Alcoa Forging Division: Mesta 50,000-Ton Closed Die Forging Press
(Air Force Plant 47: Mesta 50,000-Ton Closed Die Forging Press)
1600 Harvard Avenue
Cleveland
Cuyahoga County
Ohio

HAER No. OH-64

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington, DC 20013-7127

HAER
OHIO,
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HISTORIC AMERICAN ENGINEERING RECORD

ALCOA FORGING DIVISION: MESTA 50,000-TON CLOSED DIE FORGING PRESS
(Air Force Plant 47: Mesta 50,000-Ton Closed Die Forging Press)
HAER OH-64

Location: 1600 Harvard Avenue, Cleveland, Cuyahoga County, Ohio

Date of Construction: Completed 1955

Present Owner: Alcoa (Aluminum Company of America)

Present Use: Forging press

Signigicance: The Mesta 50,000-Ton Forging Press represents the culmination of many years' attempts to build heavy presses. Motivated by Cold War fears and the demand for new aircraft brought on by the Korean War, the Industrial Resources Division and Air Material Command of the United States Air Force instituted a "Heavy Press Program" during the early 1950's. The program aimed to create presses large enough to make complex castings needed for new aircraft designs.

The Mesta forging plants at West Homestead, Pennsylvania, cast the Forging Press. The total weight of the Press is about 8,000 tons. The Press itself is eighty-seven feet high, extending thirty-six feet below ground level and fifty-one feet above. It contains a die table twenty-six feet long and twelve feet wide, which is withdrawn only when the forging dies are changed. Maximum press stroke is six feet. With a working press stroke of one foot, the press is designed to operate at 30 cycles per hour.

Press force is generated by a hydro-pneumatic pressure system consisting of four pre-filler bottles, two horizontal reciprocating pumps driven by 1,500 H.P. motors, and four forged alloy steel pressure accumulator bottles. (The hydraulic fluid is water with a small amount of oil added.) A pressure of 4,500 p.s.i. is built up in each accumulator and released to the eight pressure cylinders housed in the stationary crossheads at the top of the press. The combined effort of these cylinders produces 50,000 tons of forging capacity. At the end of the press cycle, the hydraulic force is reversed and directed to eight pull-back and balancing cylinders that return the moving crosshead assembly to its upper position.

The press was rebuilt in 1974 to provide a more advanced hydraulic valve system and provide more precision during the forging cycle. On September 24, 1981, the Press was declared a National Historic Mechanical Engineering Landmark by the American Society of Mechanical Engineers.

Source: Dedication Program, "50,000 Ton Closed Die Forging Press, United States Air Force Plant 47, Operated by Aluminum Company of America Forging Division, Cleveland, Ohio. Thursday, September 24, 1981." Published by the American Society of Mechanical Engineers., 1981.

Historian: Robert Buerglener, HABS/HAER, September, 1988.

ALCOA
ALCOA FORGING DIVISION:
MEGA 50,000-TON CLOSED DIE FORGING PRESS
(Air Force Plant 47;
Formerly 50,000-Ton Closed Die Forging Press)
1600 Harvard Avenue
Cleveland
Cuyahoga County
Ohio

HAER No. OH-64

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